



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

* * Dr. G. B. M. Zerr and Mr. J. F. Lawrence prove in general that $a_1 + a_2 + \dots + a_n > n\sqrt[n]{(a_1 a_2 \dots a_n)}$. Dr. Zerr also proved that $(a_1^m + \dots + a_n^m)/n > [(a_1 + \dots + a_n)/n]^m$.

210. Proposed by W. J. GREENSTREET, A. M., Editor of The Mathematical Gazette, Stroud, England.

The sum of five quantities and the sum of their cubes are both zero. Show that the sum of their fifth powers is a factor of the sum of any odd powers of the quantities.

Solution by G. W. GREENWOOD, M. A. (Oxon), Professor of Mathematics and Astronomy in McKendree College, Lebanon, Ill.

Denote the quantities by $a, \beta, \gamma, \delta, \epsilon$, and let the equation of which they are the roots be

$$x^5 + ax^4 + bx^3 + cx^2 + dx + e = 0.$$

Then

$$\Sigma a = -a = 0.$$

$$\Sigma a^3 = (\Sigma a^2 - \Sigma a\beta)\Sigma a - \Sigma a\beta\gamma = c = 0.$$

Substituting the roots in turn for x , and adding, we get,

$$\Sigma a^5 + 5e = 0.$$

Multiply the equation by x^2 , make the same substitutions, and we get in a similar manner,

$$\Sigma a^7 + b\Sigma a^5 + 5e = 0,$$

$$i. e., \Sigma a^7 + (b-1)\Sigma a^5 = 0.$$

Hence Σa^5 is a factor of Σa^7 and the process may be repeated indefinitely.

Also solved by Elmer Schuyler, G. B. M. Zerr, J. Scheffer.

GEOMETRY.

228 Proposed by O. E. GLENN, A. M., Fellow in Mathematics, University of Pennsylvania, Philadelphia, Pa.

Given a point O without a circle S ; two arbitrary lines through O cut S in the points A, A' , and B, B' , respectively. Prove, by pure geometry, that the four circles through $OAR, OBR, OA'R', OB'R'$, respectively, intersect in points collinear with O ; R and R' being points upon S arbitrarily chosen.

Solution by T. L. CROYES, Paris, France.

Let us take the inverse of the system with regard to O , and let the inverses of the five circles $S, OAR, OBR, OA'R', OB'R'$, be a circle s , and the four right lines $ar, br, a'r', b'r'$ (a, a', b, b', r, r' being the inverses of A, A', B, B', R, R').

By Pascal's theorem, the points of intersection $(ar, b'r')(br, a'r')$ are collinear with the point O .

237. Proposed by S. A. COREY, Hiteman, Iowa.

Let AB, BC, CD, DE, EA be the sides of a pentagon, plain or gauche. Double the length of CB and DE by extending from B and E to G and H , re-